SIGNAL DIFFERENTIATION SYSTEM
USING IMPROVED NON-LINEAR OPERATOR

ABSTRACT OF THE DISCLOSURE

A system for detecting subtle differences in a signal in a set of linearly and/or non-linearly related signals that characterize a sensor-instrumented machine, process or living system. The system employs an improved similarity operator for signal differentiation. Signals or data representative of several linearly and/or non-linearly related parameters that describe a machine, process or living system are input to the inventive system, which compares the input to acceptable modeled states. If one or more of the input signals or data are different than expected, given the relationships between the parameters, the inventive system will indicate that difference. The system can provide expected parameter values, as well as the differences between expected and input signals; or the system can provide raw measures of similarity between the collection of input signals and the collection of acceptable modeled states. The system can be embodied in software or in a micro-controller.